CLAIMS

What is claimed is:

1. A method of generating information symbols, comprising: (a) turning on, for an i^{th} predetermined length of time, during an i^{th} time period, x_i frequency carriers, where $0 \leq x_i \leq n$, and $1 \leq i \leq n$; (b) determining whether $n - \sum x_i = 0$; and (c) if the determination of (b) is negative, repeating (a) through (b); wherein x_i represents an integer number of frequency carriers, and n represents a total number of available frequency carriers.

2. The method of Claim 1, further comprising: (d) if the determination of (b) is affirmative, waiting for a period of time.

3. The method of Claim 2, further comprising: subsequent to waiting for the period of time, repeating (a) through (c).

4. The method of Claim 3, wherein the period of time is a predetermined guard band that is disposed between information symbols.

5. The method of Claim 4, wherein the information symbols occupy a frequency bandwidth greater than 500 MHz.

6. A method of transmitting symbols, each symbol having n modulation symbol times, with a transmitter having a set of n frequency carriers, comprising: providing (302) data to be transmitted; and determining (304), based at least in part on the provided data, which frequency carriers, if any, of the set of n frequency carriers, are to be turned on during each of the n modulation symbol times, each modulation symbol time being of a predetermined amount of time; and turning on (306) each of the frequency carriers as determined in (b) during each of the modulation symbol times; wherein each frequency carrier must be turned on for a period of time not greater than the modulation symbol time; and wherein each frequency carrier is turned on only once during the transmission of the symbol.

7. The method of Claim 6, wherein at least one modulation symbol time has no frequency carriers turned on.

8. The method of Claim 7, wherein at least one modulation symbol time has at least two frequency carriers turned on.

9. The method of Claim 8, wherein a BPSK modulation is used.

10. The method of Claim 6, wherein if n frequency carriers are turned on in one modulation symbol time, then no frequency carriers are turned on in the other n-1 modulation symbol times.

11. The method of Claim 6, wherein the transmitted symbols occupy a frequency bandwidth greater than 500 MHz.

12. The method of Claim 6, wherein the transmitted symbols occupy a frequency bandwidth greater than 2 GHz.

13. The method of Claim 11, wherein the n frequency carriers transmit signals in n contiguous frequency bands, and n is an integer.

14. The method of Claim 11, wherein the n frequency carriers transmit signals in n non-contiguous frequency bands, and n is an integer.

15. 1. A method of transmitting ultra wideband symbols, comprising: (a) turning on, for an i^{th} predetermined length of time, during an i^{th} time period, x_i frequency carriers, where $0 \leq x_i \leq n$, and $1 \leq i \leq m$; (b) determining whether m time periods have expired; and (c) if the determination of (b) is negative, repeating (a) through (b); wherein x_i represents an integer number of frequency carriers, n represents a total number of available frequency carriers, and m represents a total number of time periods contained within each of the ultra wideband symbols.